Microgreen Growth In Microgravity Versus Earth
A UB-Student Spaceflight Experimental Project Mission 12

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RESEARCH QUESTIONS

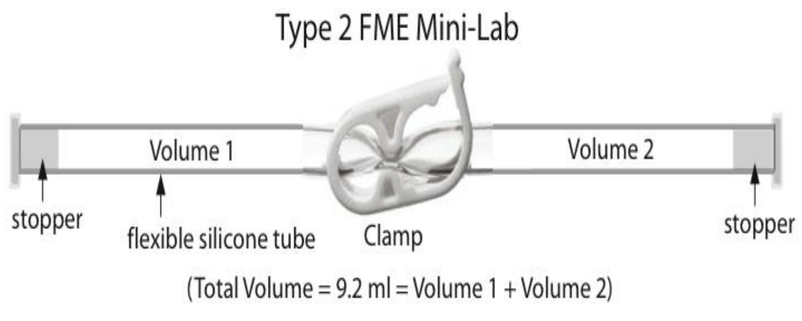
There will be 5 microgreen seeds in a container with Gardener's Gold potting soil (2016) and will be kept consistently moist with tap water, which is our control experiment. Over time, the seeds will grow into tiny plants, which are variations of lettuce. Microgreens are so versatile, they could grow in almost anything as long as there is soil and moisture. Keeping the factors that affect its growth at the same rate on Earth and the ISS, we would like to see if the growth process is different in microgravity than on gravity.

BACKGROUND

The experiment will give us a better understanding of growing a plant in space versus Earth. The purpose of this experiment is to compare the growth rate of microgreens in gravity versus microgravity. We want to see the similarities and differences of growing microgreens in the different conditions. The Veggie system was launched in 2014 according to Herridge, L. (2014), astronauts were able to grow red romaine lettuce in 2015 at the ISS according to Foley, K.E.(2016). Instead of growing red romaine lettuce, microgreens will be used.

Gardener's Gold potting soil (2016) was chosen as the dirt for this experiment because it is all organic and plants will grow a lot faster with this brand, which also contains fertilizer. This was obtained at Ganim's Garden Center in Fairfield CT, which is also available at other garden centers as well. Microgreen seeds were used for this experiment because it's very versatile, easy to grow, and it's an edible plant. It was also obtained from Ganim's Garden Center, but these seeds could be obtained almost any garden center.

EXPERIMENTAL DESIGN



Volume 1
- 4 g of Compacted Gardener's Gold potting soil with buried 5 microgreen seeds (¼ inch under dirt)

Volume 2
- This chamber will contain approximately 3 ml of tap water
- There are no special handling requested
- Day A=0: Un-Clamp Clamp A, no interactions requested

ANALYSIS

On return to Earth, a ruler will be used to determine if the plant grows faster, slower, or at all, in space. If the space experiment grew larger, it could be concluded that the effects of microgravity increases the speed that plants grow. If the Earth experiment is larger, it could be concluded that the effects of microgravity decreases the growth of plants. If they are the same, then microgravity has no effects on the speed that plants grow.

POTENTIAL OUTCOME

The experiment is finding out the growth rate of microgreens in microgravity. In the test tube, one clamp will separate the seeds, fertilized soil (aka potting soil) from the water. On the day of the arrival to the ISS, the clamp will be released to fertilize the soil. The growth process will now begin. Based on our Earth experiment, the growth rate of the plant will be the same in microgravity.

REFERENCES

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